

A BLUE WHALE *BALAENOPTERA MUSCULUS* (LINNAEUS, 1758) FROM ST LAWRENCE, QUEENSLAND

ROBERT A. PATERSON & STEVE VAN DYCK

Paterson, R.A. & Van Dyck, S.M. 1995 12 01: A blue whale *Balaenoptera musculus* (Linnaeus, 1758) from St Lawrence, Queensland. *Memoirs of the Queensland Museum* 38(2):615-621. Brisbane. ISSN 0079-8835.

The decomposing carcass of a juvenile blue whale *Balaenoptera musculus musculus* (Linnaeus, 1758) washed ashore at St Lawrence, Queensland in February 1994. Its skeleton was retrieved together with some baleen. Comparison was made with its vertebral measurements and those of a pygmy blue whale *B. m. brevicauda*. Pathological changes, possibly post-traumatic, in the caudal vertebrae are described and the sparse records of blue whales in Queensland waters are documented. □ *Blue whales, skeletal and baleen descriptions, Queensland.*

R.A. Paterson & S.M. Van Dyck, Queensland Museum, PO Box 3300, South Brisbane, Queensland, Australia 4101; 16 October 1995.

In late January 1994 the carcass of a large whale was found drifting in Broad Sound by Chris McNamara a local fisherman. It subsequently washed ashore between Waverley and St Lawrence Creeks 11km east of St Lawrence (22°19'S, 149°38'E). On 17 February Grahame Byron of

Queensland Department of Environment and Heritage (Rockhampton) identified it as a large rorqual measuring between 16.5-17.5m in length. The uncertainty in measurement resulted from advanced decomposition and the disposition of the carcass (Fig. 1). Assisted by Peter Cross and



FIG. 1. Carcass of QMJM10415 photographed at low tide on 17 February 1994.



FIG. 2. Carcass of QMJM10415 photographed at high tide on 23 February 1994.

Kel Fowler of Queensland Boating and Fisheries Patrol (Mackay), we retrieved the available skeletal material on 23-24 February and 8 March 1994. (Details of skeletal elements, considered to have been lost prior to collection, will be given later.) The discovery of some baleen 80m from the carcass enabled its identification as a blue whale. The location of the carcass presented considerable logistic difficulties. They included a tidal range of approximately 5.5m on an exposed shore with a steep mud bank lined with living and dead mangroves. Rapid tidal flow posed dangers due to movement of the skull and mandible with their attached soft tissues (Fig. 2). The journey to the nearest boat ramp was 7km. During one journey, with the mandible lashed to the sides of the 5.2m boat and the skull being towed, the nasals and premaxillae became detached and were lost. Despite these and other difficulties the skeleton was transported initially to St Lawrence before its removal to Brisbane. It is registered QMJM10415 in the mammal collection of the Queensland Museum and is the first confirmed record of a blue whale in that collection.

SKELETAL APPRAISAL

Yochem & Leatherwood (1985) consider that blue whales are 6-7m long at birth whereas Slijper (1962) considered that they are approximately 7.5m long at birth which, in the Southern Hemisphere, occurs during May-June. He also noted that weaning occurs at seven months when length averages 16m. Accordingly, QMJM10415 may have died about the time of weaning. The length at physical maturity is 24.5-26.5m (Slijper, 1962) whereas the pygmy form (*B.m. breviceauda*) described by Ichihara (1966) reaches physical maturity at 20-22m.

The skull of QMJM10415 measured 4.32m in length and is shown, from its ventral aspect, in Fig. 3. The left side of the mandible measured 4.34m in length and the right 4.36m. There were fourteen pairs of ribs. The epiphyses of only the first two cervical and last twelve caudal vertebrae were attached to their centra. Fifty-nine vertebrae were collected but there were four additional pairs of central epiphyses making a vertebral count of sixty-three. The appearance and size of the additional epiphyses suggest that the four missing vertebrae are D9, 10, 11 and L2. The



FIG. 3. Skull of QMJM10415 from ventral aspect.

vertebral formula C7; D14; L15; Ca27=63 is consistent with others reported for the species although variations of 63-66 have been noted (Tomilin, 1957; Ichihara, 1966; Omura et al., 1970).

Pathological changes were seen in the spinous processes and neural arches of Ca10-11 (Fig. 4). Considerable hyperostosis was noted but there was no involvement of the centra as seen in spondylitis deformans, considered to be associated with advanced age in cetaceans (Slijper, 1936, Van Bree & Duguy, 1970; Lagier, 1977; Omura, 1972 & 1975; Paterson, 1984; ;). The

degree of hyperostosis, localisation to two vertebrae and lack of associated bony destruction tend to exclude metabolic bone disease, osteomyelitis and recent trauma as causes of these changes. However, trauma in the perinatal period is possible as the advanced hyperostosis is consistent with a process present for months rather than weeks. One of us (RAP) has observed hyperostotic changes localised to two vertebrae (Ca7-8) in a juvenile (central epiphyses unfused) blue whale skeleton in the British Museum of Natural History. The registration number of that specimen is BMNH1865.8.23.1. Slijper (1936) noted examples of similar pathology to that in JM10415 in juvenile cetaceans and considered that onset prior to birth was possible, given the extent of the changes.

Omura et al. (1970) demonstrated in tabular and graphic form vertebral measurements of an 18.6m long pygmy blue whale captured at 42°08'S, 44°09'E in December 1966. Its skull measured 4.86m in length. The epiphyses of all vertebrae were fused to the centra. In Fig. 5 the vertebral measurements of that specimen are compared with those of QMJM10415 whose maximum length was 17.5m. The vertebrae of the pygmy blue whale are larger in all respects than those of QMJM10415 with the exception of the lengths of the centra, particularly in the caudal region. This latter finding, admittedly in the context of only two specimens of disparate physical maturity, may be significant in that Ichihara (1966) named the pygmy blue whale *B. m. brevicauda* on the basis that its tail, on external measurement, was relatively shorter than that of *B. m. musculus*.

In addition to the missing vertebrae, discussed above, some other bones were not retrieved and may have washed away prior to our visits to the site. They were the sternum, a stylo-hyal, an ulna and some carpals and metacarpals.

BALEEN

The number of baleen plates reported for blue whales is 324 ± 6 (Mackintosh & Wheeler, 1929). A portion totalling 88 plates from the right baleen row of QMJM10415 was recovered and one of the larger plates is shown in Fig. 6. The lengths of all plates are shown in Fig. 7 and the steep decline in measurements suggests that the plates were from the posterior aspect of the row. Illustrations of complete baleen rows from a large balaenopterid in the British Museum of Natural History (Beddard, 1900) and humpback whales (*Megaptera novaeangliae*) in the Queensland

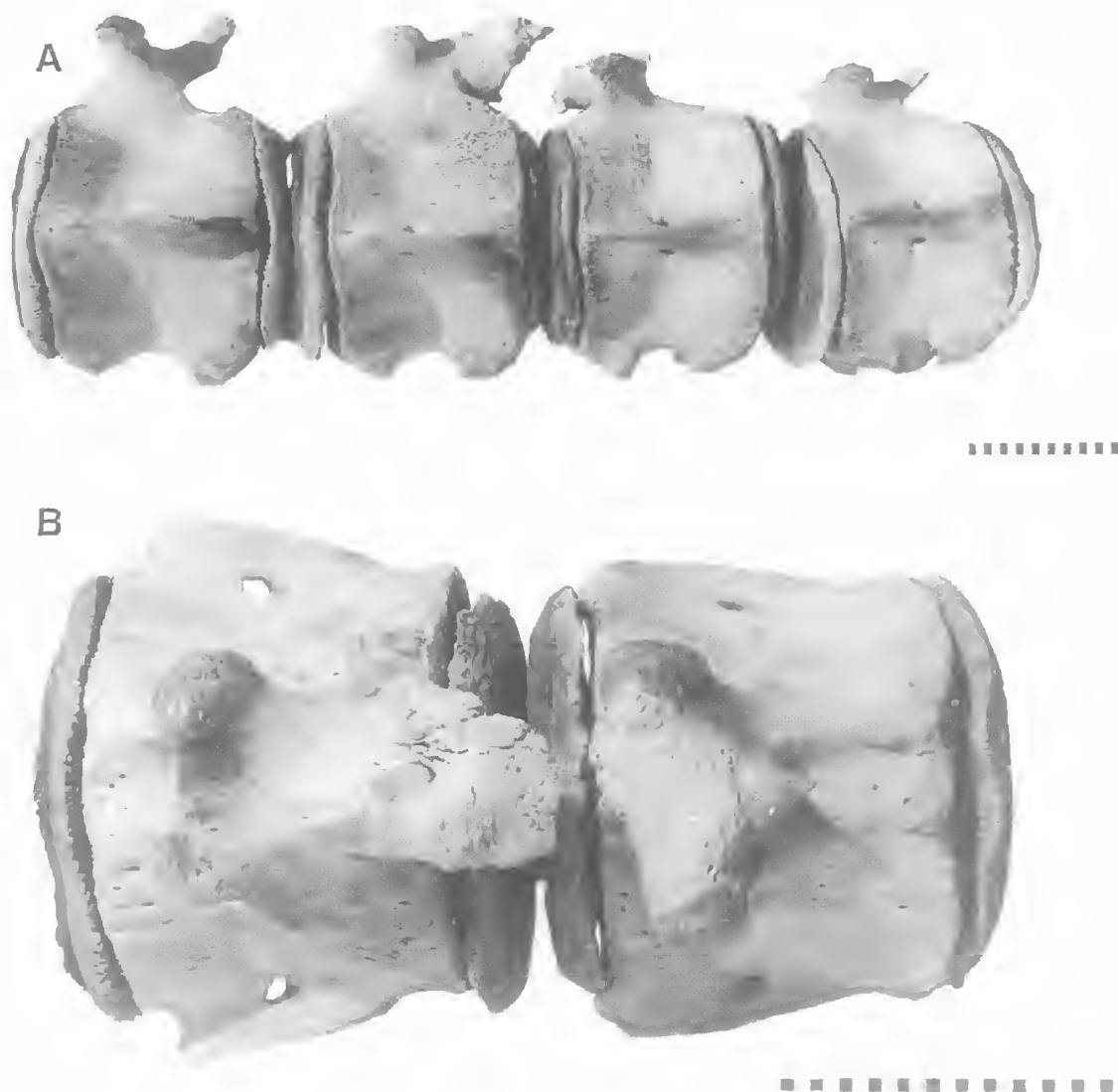


FIG. 4. Caudal vertebrae of QMJM10415 in (A) lateral and (B) dorso-ventral projection. Hyperostoses are seen on the spinous processes and neural arches of Ca 10 and 11. In the fresh specimen the pathological areas were "bridged" by fibrous tissue.

Museum (Paterson & Van Dyck, 1991) demonstrate a much steeper decline in the lengths of the posterior plates than the anterior plates.

Ichihara (1966) measured length/breadth ratios of the largest baleen plates in 77 specimens of *B. m. musculus* and 118 *B. m. brevicauda*. The ratios in the latter did not exceed 1.93 in any specimen.

The equivalent ratio in the largest recovered plate of QMJM10415 is 2.05. Although the plates of QMJM10415 may not include the largest, the ratio of 2.05 suggests that the plate is typical of *B. m. musculus*.

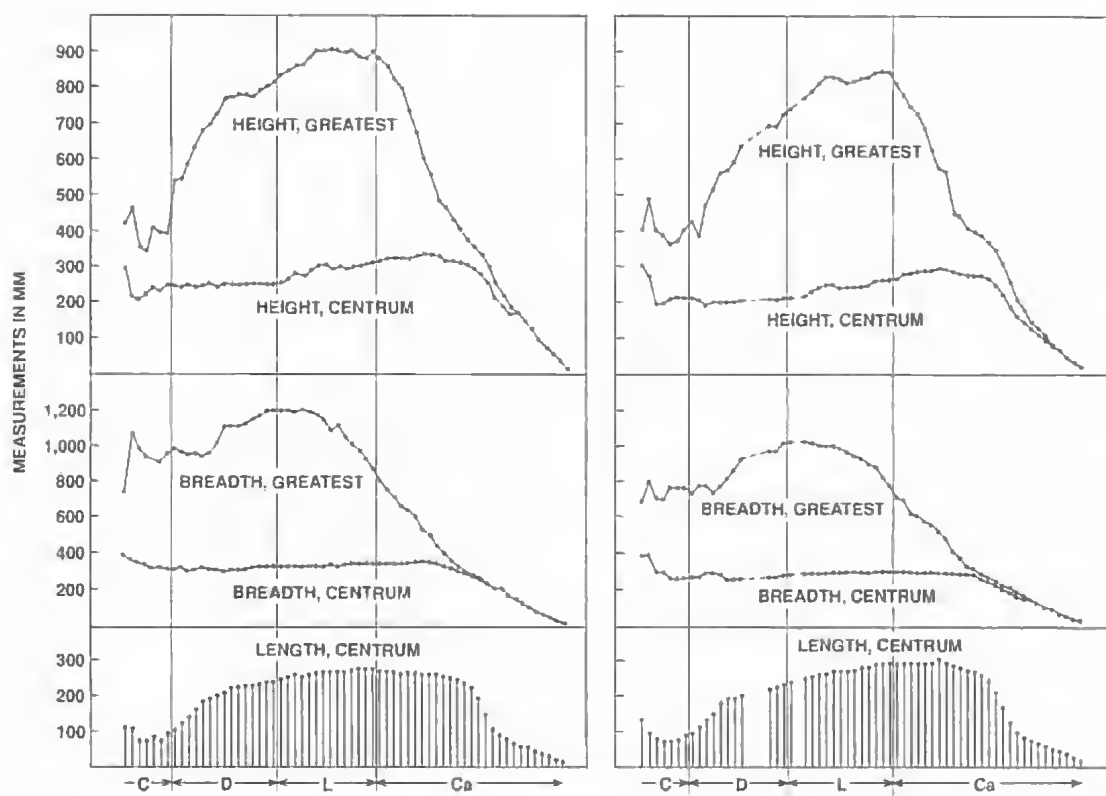


FIG. 5. Comparative vertebral measurements of QMJM10415 (right) and pygmy blue whale (left). The latter measured 18.6m in length and the former 17.5m.

QUEENSLAND BLUE WHALE RECORDS

There is an earlier record of *B. musculus* in the Queensland Museum (Paterson, 1986). The specimen (J4807) is a small portion of baleen from a whale which stranded in 1928 at Couti Uti (22°20'S, 150°08'E) not far from the locality of QMJ10415. However, re-examination of the specimen indicates that it is from a fin whale, *B. physalus* (Linnaeus, 1758). The Queensland Museum also has a photographic record of a large rorqual, possibly a blue whale, which stranded at O'Regan's Creek, Dundowran (25°18'S, 152°46'E) in the late 1930s. Eye witness accounts indicated that the whale exceeded 22m in length (M. Campbell, pers. comm.) and they are supported by the photographic evidence (Fig. 8).

In the period (1952-1962) of whale exploitation from the shore-station at Tangalooma (27°11'S, 153°23'E) 6277 humpback whales were captured and the commercial viability of the station depended exclusively on that species (Chittleborough, 1965). One blue whale measuring 20.5m in length was captured during the 1954 season. In the station's terminal phase a fruitless

search for humpback whales was made at distances exceeding 60km from the coast. During that off-shore search two blue whales were seen (L. Nash, pers. comm.). Paterson et al. (1994) assessed humpback whale population recovery from Point Lookout (27°26'S, 153°33'E) during June-October from 1978-1992 and saw only one blue whale. Identification was made on the basis of the extremely tall blow, which exceeded 10m in height and is considered to be characteristic of the species (Horwood, 1986). These isolated capture, sighting and stranding records suggest that blue whales are infrequent visitors to Queensland coastal waters whereas they are more frequently sighted in the cooler waters of southern Australia (Paterson, 1982) and stranding records are more numerous from those regions (Dixon & Frigo, 1994; Kemper & Ling, 1991).

ACKNOWLEDGEMENTS

We owe particular thanks to Peter Cross and Kel Fowler of QBFP. Without their generous assistance and local knowledge the retrieval



FIG. 6. One of the largest baleen plates of QMJM10415.

would not have been possible. Grahame Byron of QDEH performed the initial inspection and pro-

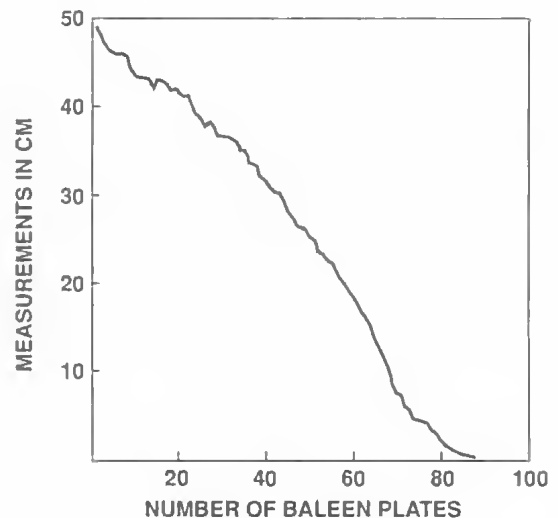


FIG. 7. Graph demonstrating the length of the baleen plates, considered to be from the right posterior row of QMJM10415.

vided Fig. 1. Ben Ingram and Richard McTaggart of the St Lawrence Police Station provided support and staff of the Broadsound Shire Council and Queensland Railways assisted with transport and loading. The hospitality of Ken Johnson and family of the Sportsman's Arms Hotel at St Lawrence was much appreciated. Staff at the Luggage Point Wastewater Treatment Plant at Pinkenba kindly allowed us to store the skeleton there during cleaning and ensured its safety. A generous donation from the Australian Whale Conservation Society defrayed steam-cleaning costs. Bruce Cowell of the Queensland Museum prepared the photographs and Sue Gray prepared the figures.

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FIG. 8. Skeleton of large rorqual, possibly a blue whale, at Dundowran in the 1930s. The skull and mandible are situated in an inverted position, to the right of the photograph.

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